PEACE/WILLISTON
FISH & WILDLIFE
COMPENSATION
PROGRAM

BC hydro

BRITISH
COLUMBIA

A reconnaissance survey of Unnamed Lake (Little MacDonald Lake)

M Hunter
March 1997

PWFWCP Report No. 147

The Peace/Williston Fish & Wildlife Compensation Program is a cooperative venture of BC Hydro and the provincial fish and wildlife management agencies, supported by funding from BC Hydro. The Program was established to enhance and protect fish and wildlife resources affected by the construction of the W.A.C. Bennett and Peace Canyon dams on the Peace River, and the subsequent creation of the Williston and Dinosaur Reservoirs.

Peace/Williston Fish and Wildlife Compensation Program, 1011 Fourth Ave. 3rd Floor, Prince George B.C. V2L 3H9

Website: *www.bchydro.bc.ca/environment/initiatives/pwcp/*

This report has been approved by the Peace/Williston Fish and Wildlife Compensation Program Fish Technical Committee.

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105-02930/

A RECONNAISSANCE SURVEY OF

UNNAMED LAKE (LITTLE MACDONALD LAKE)

WATERSHED:	**Williston Reservoir (Parsnip Reach)**
DATE OF SURVEY:	**July 17 -18,1996**
FIELD CREW LEADER:	**Mark Hunter**
FIELD ASSISTANT:	**Karin Mathias**
REPORT PREPARED BY:	**Mark Hunter**

BRITISH COLUMBIA CONSERVATION FOUNDATION

PEACE / WILLISTON FISH AND WILDLIFE COMPENSATION PROGRAM

B. C. MINISTRY OF ENVIRONMENT

FUNDED BY: FOREST RENEWAL BRITISH COLUMBIA

RELEASED BY: _____

D. J. Cadden, Regional Fisheries Biologist

LAKE: Little MacDonald Lake **SYSTEM NAME:** Nation River

A.S.A.P. REFERENCE NO.: **WATERSHED CODE: 237-6732-688**

DATA ON FILE FOR THIS SURVEY

Location	X	Dissolved 02 / Temp. Profiles	X
Physical Data	X	Winter Dissolved 02 / Temp. Profiles	--
Bench Mark	X	Netting Record	X
Terrain Features	X	Lake Catch Summary	X
Access	X	Individual Fish Data	X
Resorts and Campsites	X	Fish Preserved	--
Other Developments	X	Stomach Analysis	X
Obstructions and Pollutions	X	Scale Reading	X
Special Restrictions	X	Location of Inventory Sites	X
Aquatic Plants	X	Photograph Directory	X
Wildlife Observations	X	Appendices	
Miscellaneous Comments	X	A: Water Chemistry Analysis	X
Lake Drainage	X	B: Tributary Stream Data	X
Fisheries Management Comments	X	C: Fish Scale Analysis	X
History of Previous Surveys	X	Bathymetric Map Reduction	X
Water Chemistry Summary	X	Bathymetric Map	--

LOCATION

Location:	approximately 146 km west of Mackenzie		
Elevation:	975 m ± 25 m	U.T.M.:	10.349746.6119822
Latitude / Longitude:	55°12'07" 125°21'40"	N.T.S. Map No.:	93 - N / 3
Management Unit:	7-28	Biogeoclimatic Zone:	Boreal White and Black Spruce
Ecoprovince:	Sub-Boreal Interior	Ecoregion:	Fraser Basin
Ecosection:	Babine Uplands		

Drainage: Unnamed C. --> Purvis L. --> Unnamed C. --> Unnamed C. --> Unnamed L Unnamed C.--> Tchentlo L. --> Nation R. --> Chuchi L. --> Nation R. --> Williston Reservoir (Parsnip Reach - Nation Arm) --> Peace R.

PHYSICAL DATA

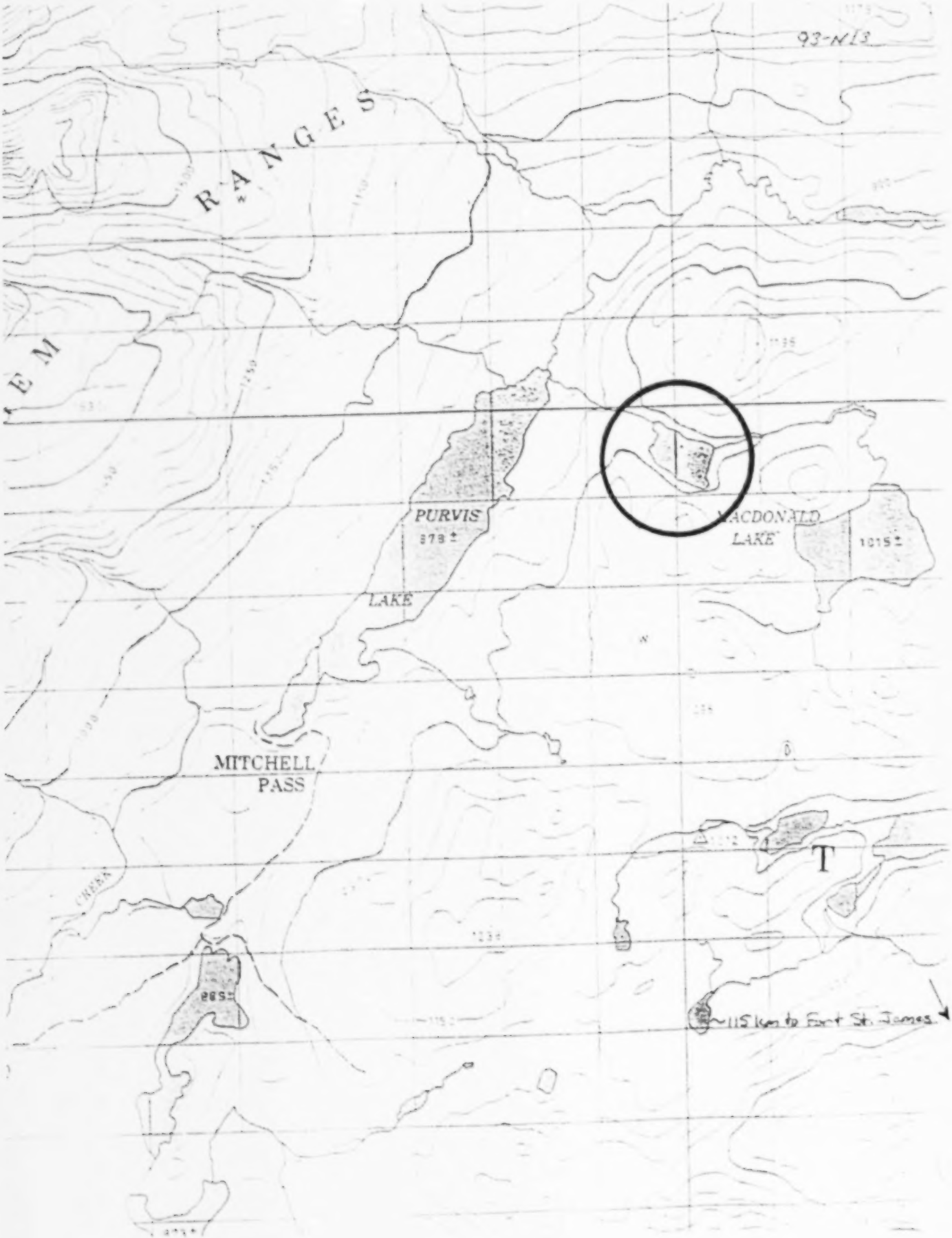
Lake Drainage Area:	12.7 km^2	Volume:	1 269 482 m^3
Water Surface Area:	328 880 m^2	Perimeter of Islands:	0 m
Area Above 6 m Contour:	243 037 m^2	Number of Islands:	0
Shoreline Perimeter:	2 564m	Mean Depth:	3.9 m
Maximum Depth:	9.05 m	Secchi Reading:	3.48 m
Filterable Residue (TDS):	50 mg/L		

Sounding Device: Lowrance X-15 Elevation Source: Contour Interpolation

BENCHMARK

(Iron spike, center of red circle) located 2.0 m above present water level in a 42 cm diameter spruce tree that is 2.45 m from the present lake's edge and located half way along the south shore (Plate # 4).

High Water Mark: 0.4 m above water level at time of survey


93-N13
RANGES
PURVIS
873±
LAKE
MACDONALD
LAKE
1015±
MITCHELL
PASS
T
115 km to Fort St. James

LAKE: Unnamed Lake (Little MacDonald Lake)

TERRAIN FEATURES

Immediate Shoreline:

Little MacDonald Lake is fronted on all sides by a growth of sedge grasses and alders with spruce and fir trees growing behind on low to moderately low slopes. Along the southwest shoreline, the lake's bank is a cut bank with a low slope behind.

Along the south and southeast shoreline, the dominate substrate is silts and organics. Along the east and west shore, the dominate substrate is gravels and cobbles with some fines. The northwest, north and northeast shoreline substrate is mainly boulders, cobbles and gravels with fines. The lake's bottom drops off at a moderately steep slope towards the center of the lake along the southeast and north east side of the lake, and in the northwest bay. Along the west and southwest side of the lake, the lake's bottom drops off at a steeper slope towards the center of the lake.

In the east corner of the lake, a sedge grass finger jutting out into Little MacDonald Lake has become established. In the northwest corner of the lake where the outlet creek drains the lake, a large amount of large woody debris has accumulated to create a debris jam at the mouth of the outlet.

Surrounding Country:

Little MacDonald Lake is surrounded by a mature forest of spruce and fir trees on low hills to the northwest and southwest, and on moderately steep hills to the northeast and southwest. There was a large amount of blow down in the surrounding forest. Mountains are located to the east-northeast and northwest in the near distance. To the north and south, there are steep hills in the near distance. Little MacDonald Lake is situated within the Boreal White and Black Spruce biogeoclimatic zone.

LAKE: Unnamed Lake (Little MacDonald Lake)

ACCESS

Directions:

From the junction of Highway 27, the Teardrop Forest Service Road and the Germansen Landing North Road, follow the Teardrop Forest Service road west for approximately 40 km. Turn right on to the Leo Creek Forest Service Road and proceed for approximately 68 km to where the Driftwood Forest Service Road breaks off. Turn right on to the Driftwood Forest Service Road and drive for approximately 15 km to the entrance to the Tchentlo Lake Lodge. From the Tchentlo Lake Lodge, Little MacDonald Lake is approximately a 6.5 km helicopter ride to the southwest.

Road Type and Conditions:

All three of the forest service roads are well maintained, two lane gravel roads that can be easily traveled in the summer with a two wheel drive vehicle.

Restrictions:

None known.

RESORTS AND CAMPSITES

None known.

OTHER DEVELOPMENTS

None known.

OBSTRUCTIONS AND POLLUTIONS

A large amount of large woody debris has formed a debris jam at the mouth of the outlet creek in the northwest corner of the Little MacDonald Lake.

LAKE: Unnamed Lake (Little MacDonald Lake)

SPECIAL RESTRICTIONS

None known.

AQUATIC PLANTS

The following aquatic plants were identified at the time of the survey:

Equisetum sp. sedge grasses

WILDLIFE OBSERVATIONS

The following wildlife or signs were seen during the survey:

ducks (unidentified) moose tracks and droppings

songbirds

MISCELLANEOUS COMMENTS

1) The large amount of submerged boulders found in the north end of the lake are hazardous to boaters as they are very difficult to locate, especially during the late afternoon and early evening.

2) Bathymetric map: The lake outline was drawn from an enlargement of air photo 30 BCC 379: No. 048, flown on August 15, 1985.

LAKE: Unnamed Lake (Little MacDonald Lake)

LAKE DRAINAGE

General:

Little MacDonald Lake has two inlets that empty into the lake from the east. The outlet flows for approximately 1.1 km before it enters Purvis Lake in it's northeast end. Purvis Lake is drained to the northeast by an unnamed creek; this creek runs for approximately 7.0 km (including through an unnamed lake) to flow into Tchentlo Lake, which in turn is drained by the Nation River.

Major Systems:

There are no major systems.

Minor Systems:

Inlet # 1 - Unnamed Creek

Inlet # 1 enters Little MacDonald Lake in the southeast corner of the lake (Plate # 5). The first 10 m of the creek has an average wetted width of 2.5 m and depth of 0.5 m. The substrate is dominated by silts and organics, and the channel flows between sedge grass banks overgrown by alders. Approximately 10 m upstream from the lake, the channel braids. The main braid flows underground for approximately 2 m - the possibility of fish passage is questionable. After resurfacing, the main braid has an average wetted width of 1.0 m and depth of 0.3 m. The substrate is composed of silts / fines, gravels and cobbles (Plate # 6). Inlet # 1 had no fisheries potential during the survey period.

Inlet # 2 - Unnamed Creek

Inlet # 2 enters Little MacDonald Lake in the east corner (Plate # 7). The channel is braided in some places and is heavily overgrown by alders. A large amount of blowdown has fallen into the creek that would provide some cover to any fish in the creek. The substrate is comprised of gravels, cobbles boulders and fines. A large amount of fool's gold is found throughout the length of creek that was walked.

A Stream Survey card was completed for a sample site located approximately 150 m upstream from the lake (Plates # 8 & 9). The average wetted width is 4.7 m and the average maximum riffle depth is 0.22 m. The substrate is comprised of small gravels (40%), large cobble (20%), boulders (20%) and fines (20%), and offers some patches of spawning habitat. The banks are moss covered and overgrown by alders and willows. The creek morphology is mainly run (50%) and riffle (40%) with an occasional pool (10%) and has a gradient of 4.5%. The water temperature at the time of survey was 13.5 °C. For additional information, refer to Appendix B.

LAKE: Unnamed Lake (Little MacDonald Lake)

Outlet - Unnamed Creek

A large debris jam, 0.5 m in height, has formed at the mouth of the outlet (Plate # 10). The source of woody debris appears to be blow down that has fallen into the lake and been transported to the end of the lake by the wind and waves. Approximately 46 m downstream of the lake, a second debris jam has formed that is 0.6 m high (Plate # 11). Both debris jams will not impede fish movement as water flowed freely through both debris jams. A large amount of overhanging vegetation and water disturbance created by boulders provides for a large amount of cover - approximately 80% of the creek area. However, the gradient may be too high for young fish to stay in the creek.

A Stream Survey card was completed for a sample site located approximately 40 m downstream of the lake (Plates # 12 & 13). The average wetted width is 4.4 m and the average maximum riffle depth is 0.25 m. The substrate is made up of boulders (50%), small gravel (25%), fines (20%) and large cobble (5%). Occasional boulders reach up to approximately 2.0 m across. The creek morphology is dominated by riffles (70%) and had a gradient of 7.5%. For additional information, refer to Appendix B.

LAKE: Unnamed Lake (Little MacDonald Lake)

FISHERIES MANAGEMENT COMMENTS

Little MacDonald Lake supports a large population of rainbow trout that could sustain a moderate use fishery. However, access to the lake could prove to be difficult as there are no roads that pass close to the lake. The main source of spawning habitat close to the lake appeared to be found in Inlet # 2. Additional spawning habitat may be found further downstream on the outlet creek, or in one of the tributaries to Purvis Lake. Both the dissolved oxygen levels and pH are at appropriate levels for a fish population to survive.

HISTORY OF PREVIOUS SURVEYS

Lake Surveys:

None known.

Other Related Studies:

None known.

LAKE: Unnamed Lake (Little MacDonald Lake)

WATER CHEMISTRY SUMMARY **Limnology Station No. 1**

Field Conditions:

Date:	July 18, 1996		
Time:	1050 hrs	Air Temperature:	12 °C
Wind Velocity:	15 - 20 km/h	Wind Direction:	from the E
Cloud Cover:	9 / 10 o.c.	Surface Conditions:	light waves
Secchi Disc:	3.48 m	Water Colour:	tannic

Method Used:

Dissolved Oxygen:	YSI Model 57 Oxygen / Temperature Meter
Water Temperature:	YSI Model 57 Oxygen / Temperature Meter
Air Temperature:	Hand-Held Alcohol Thermometer
pH (field):	Digital pH Pocket Tester
H2S (field):	Hach H2S Field Test Kit
Laboratory Used:	Pacific Environmental Science Center
Water Sampler:	Vertical Alpha Water Bottle (Vandorn)
Metal Sampler:	By Hand; Preserved With 2.0 mL Nitric Acid
Substrate Sampler:	Substrate Sample Not Taken

Water Sample Chemistry: **SEAM Site No.:** E 223178

	Sampling Depths	
	Surface (0.5 m)	Lower (8.0 m)
Alkalinity (lab)	110 mg / L	110 mg / L
Filterable Residue 105°C (lab)	50 mg / L	50 mg / L
H2S (field)	N/A	0 mg / L
Nitrogen - Total (lab)	0.36 mg / L	0.40 mg / L
Non-Filterable Residue (lab)	< 5 mg / L	< 5 mg / L
pH (field)	8.4	7.5
pH (lab)	7.08	6.37
Phosphorus - Total Dissolved (lab)	0.005 mg / L	0.005 mg / L
Specific Conductance (lab)	34 µS / cm	41 µS/ cm

Bottom Depth: 9.05 m

Substrate Sample Depth: N/A

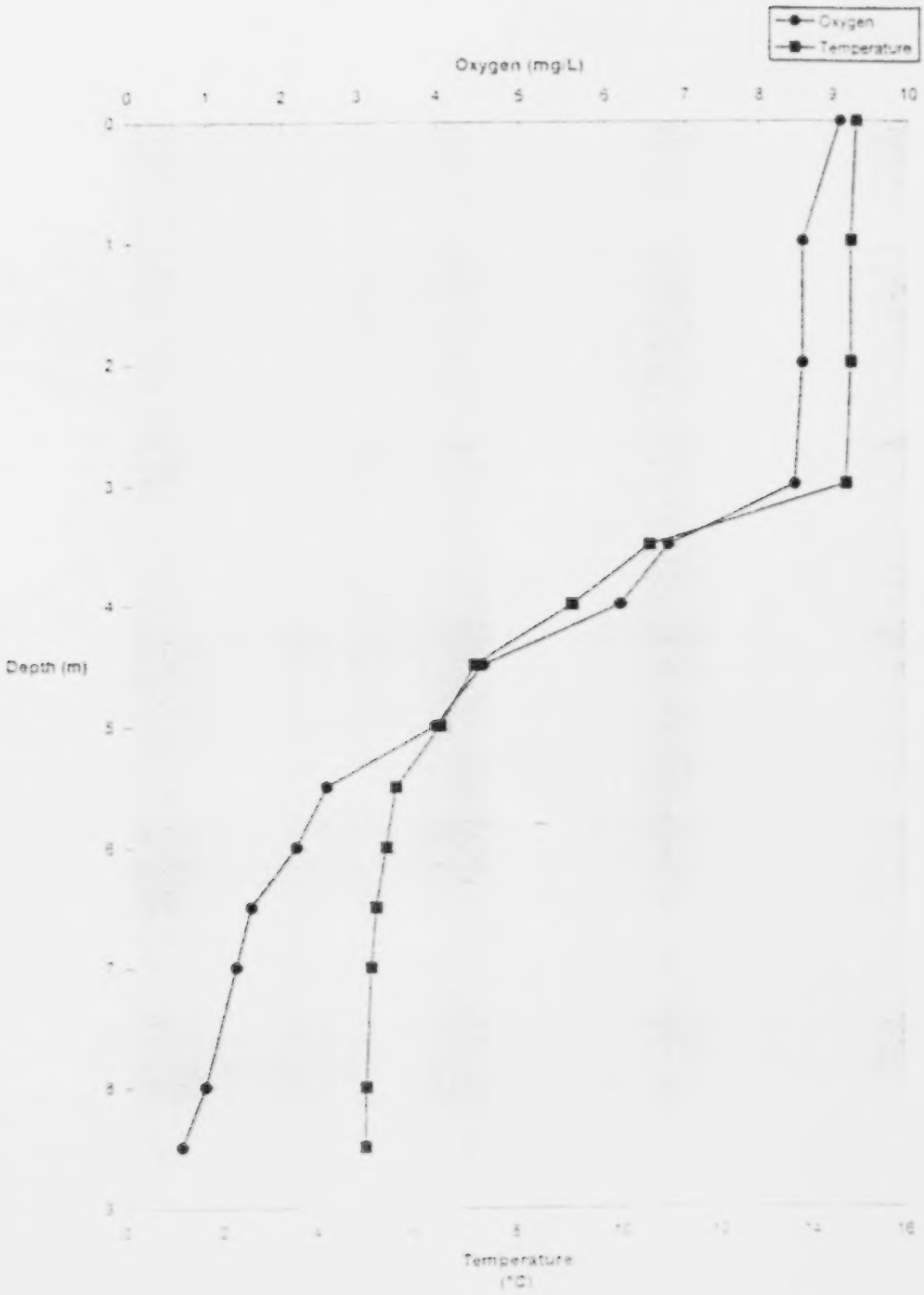
* additional analyzed parameters and results, including metals, are found in Appendix 1

LAKE: Unnamed Lake (Little MacDonald Lake)

SUMMER OXYGEN / TEMPERATURE DATA

DEPTH (m)	02 (mg / L)	TEMPERATURE (°C)
Surface	9.1	14.9
1.0	8.6	14.8
2.0	8.6	14.8
3.0	8.5	14.7
3.5	6.8	10.5
4.0	6.2	9.0
4.5	4.6	7.2
5.0	4.0	6.5
5.5	2.6	5.6
6.0	2.2	5.4
6.5	4.6	5.2
7.0	4.1	5.1
8.0	1.0	5.0
8.5	0.7	5.0
9.05	Bottom	

SUMMER OXYGEN / TEMPERATURE PROFILE



LAKE: Unnamed Lake (Little MacDonald Lake)

NETTING RECORD

Mesh Size Experimental Order: 25, 76, 51, 89, 38, 64 mm

NETTING SITE # 1

Type:	Sinking Monofilament Gill Net			
Date Set:	July 17, 1996		Time:	1215 hrs
Date Lifted:	July 19, 1996		Time:	1720 hrs
Net Dimensions:	Length:	91.4 m	Depth:	2.4 m
Shallow End Mesh Size:	25 mm		Depth:	0.8m
			Substrate:	cobble / boulder
Deep End Mesh Size:	64 mm		Depth:	5.0 m
			Substrate:	fines

Comments:

LAKE CATCH SUMMARY

Species	Netting Site	Angled	Other	Total	Number	Number	Size Range
	No. 1				Sampled	Preserved	(cm)
RB	84	0	0	84	30	0	10.9-25.4
LNS	3	0	0	3	0	0	9.6-13.4

Minnow Traps:

Bait: Sardines

Trap No.	Hours	Depth (m)	Substrate	Species	No. Caught	Size Range (cm)
1	5:19	1.0	silt over boulder	**RB**	4	9.0-13.8
2	5:22	0.8	silt / organics	**RB**	4	8.9-12.3
3	5:22	0.6	silt / organics and Yellow Waterlily	**RB** LKC	8 7	9.1-13.8 6.9-9.9
4	5:25	0.6	silt over cobble and eel grass	empty	0	-

LAKE: Unnamed Lake (Little MacDonald Lake)

INDIVIDUAL FISH DATA

Date Captured: July 17, 1996

Method: Sinking Monofilament Gillnet

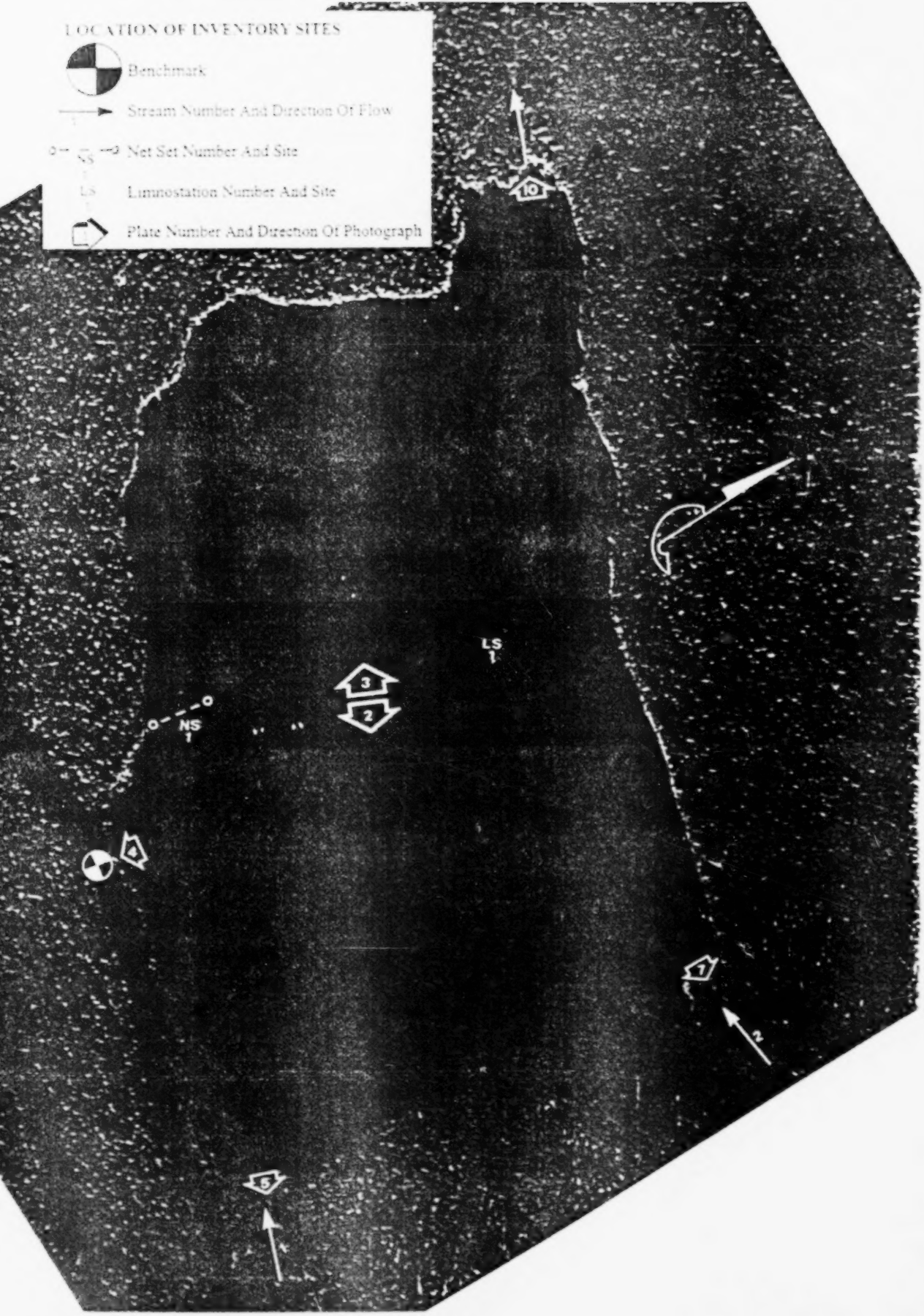
M - Male
F - Female
? - Not Obvious

IMM - Immature
MG - Maturing
MT - Mature
GV - Gravid
SP - Spent
? - Not Obvious

EG - Egg
FR - Fin Ray
HD - Head
ML - Milt
OT - Otolith
SC - Scale

Species	Fork Length (cm)	Weight (grams)	Sex	Gonadal Maturity	Sample Type	Age (yr)	Stomach Contents: Plankton	Insects	Fish	Other	Comments
RB	20.4	93	M	Imm	SC	3+	Ch				
RB	23.6	145	M	Imm	SC	3+				empty	
RB	18.7	72	M	Imm	SC	2+	Ch				
RB	22.8	122	F	GV / MT	SC	2+	Ch				
RB	21.5	120	M	Imm	SC	3+	Ch				
RB	19.3	79	F	GV / MG	SC	3+	Ch				
RB	22.8	140	F	MG	SC	3+	Ch				
RB	22.8	127	F	GV / MG	SC	4+	Ch				Li on gills
RB	15.0	37	M	Imm	SC	2+		B			
RB	21.3	105	F	MG	SC	3+	Ch		Sn		
RB	24.6	128	F	GV / MG	SC	3+	Ch				
RB	13.2	22.5	M	Imm	SC	2+		B			
RB	21.0	104	F	MG	SC	3+	Ch				
RB	22.0	98	M	MG	SC	3+	Cr	CF		Sn	
RB	20.5	97	F	MG	SC	4+	Cr				
RB	20.4	91	M	MG	SC	3+	Ch				Li on fins and gills
RB	25.4	176	M	Imm	SC	3+	Ch				
RB	13.5	24	M	Imm	SC	2+		B			
RB	16.7	48.5	M	Imm	SC	2+		B			
RB	23.5	144	M	Imm	SC	3+	Ch				cysts in body cavity
RB	11.8	15	M	Imm	SC	2+		B			
RB	24.4	138	F	GV / MG	SC	3+				empty	TW in St
RB	19.0	73.5	M	Imm	SC	3+	Ch				
RB	18.3	61	F	MG	SC	3+	Ch				
RB	18.2	67.5	F	GV / MG	SC	2+	Ch	May fly			
RB	18.3	66	M	Imm	SC	2+	Ch				TW on St
RB	11.2	15.5	M	Imm	SC	1+		B			
RB	25.0	162	F	GV / MG	SC	3+	Ch				
RB	10.9	12	F	Imm	SC	1+		B			
RB	23.7	134	F	GV / MG	SC	3+	Ch				

B - Beetle
C - Clams
CF - Caddis Fly
Ch - Chaoborus
Cr - Chironomids
Da - *Daphnia*
Di - Diptera
G - *Gammarus*
L - Leech
Li - Lice
O - Organics
S - Snails
St - Stomach
TW - Tape Worm
WB - Water Boatman
WF - Whole Fish


LOCATION OF INVENTORY SITES
Benchmark
Stream Number And Direction Of Flow
Net Set Number And Site
Limnostation Number And Site
Plate Number And Direction Of Photograph
NS 1
LS 1
10
3
2
4
7
5

LAKE: Unnamed Lake (Little MacDonald Lake)

PHOTOGRAPH DIRECTORY

Plate	Roll : Number	Description
1	8:18	Aerial view of Unnamed Lake (Little MacDonald Lake) looking east. Note MacDonald Lake in the background.
2	8 : 5-7	Panoramic view of Unnamed Lake (Little MacDonald Lake) looking east from the center of the lake.
3	8: 2-4	Panoramic view of Unnamed Lake (Little MacDonald Lake) looking west from the center of the lake.
4	9: 24	View of benchmark located 2.0 m above present water level in a 42 cm diameter spruce tree that is 2.45 m from the present lake's edge and located half way along the south shore.
5	8: 14	View of the mouth of Inlet # 1 where it enters Unnamed Lake (Little MacDonald Lake) in the southeast corner of the lake.
6	8: 16	Upstream view of the main channel of Inlet # 1, taken approximately 25 m upstream of Unnamed Lake (Little MacDonald Lake).
7	8: 11	View of the mouth of Inlet # 2 where it enters Unnamed Lake (Little MacDonald Lake) in the northeast corner of the lake.
8	8:13	Upstream view of the sample site on Inlet # 2, taken approximately 150 m upstream of Unnamed Lake (Little MacDonald Lake).
9	8: 12	Downstream view of sample site on Inlet # 2, taken approximately 165 m upstream of Unnamed Lake (Little MacDonald Lake).
10	8:1	View of the mouth of the outlet where it drains Unnamed Lake (Little MacDonald Lake) to the west from the northwest corner of the lake.
11	8: 8	Downstream view of the debris jam on the outlet, located approximately 26 m downstream of Unnamed Lake (Little MacDonald Lake).

LAKE: Unnamed Lake (Little MacDonald Lake)

12	8: 10	Upstream view of the sample site on the outlet, taken approximately 40 m downstream of Unnamed Lake (Little MacDonald Lake).
13	8: 9	Downstream view of the sample site on the outlet, taken approximately 20 m downstream of Unnamed Lake (Little MacDonald Lake).

Plate # 1: Aerial view of Unnamed Lake (Little MacDonald Lake) looking east. Note MacDonald Lake in the background.

LAKE: Unnamed Lake (Little MacDonald Lake)

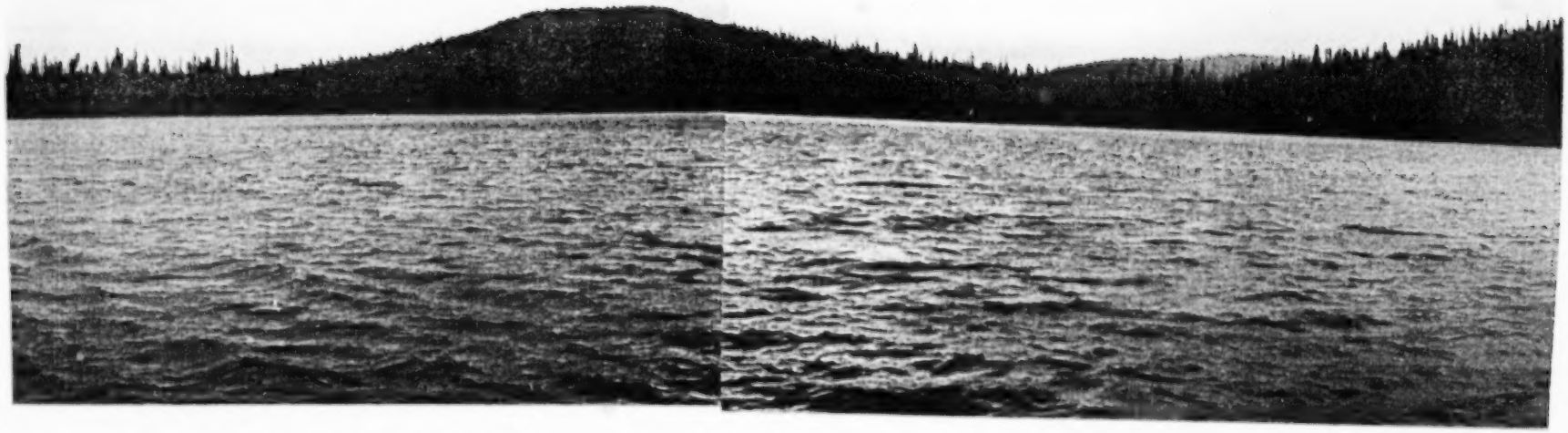


Plate # 2: Panoramic view of Unnamed Lake (Little MacDonald Lake) looking east from the center of the lake.

LAKE: Unnamed Lake (Little MacDonald Lake)

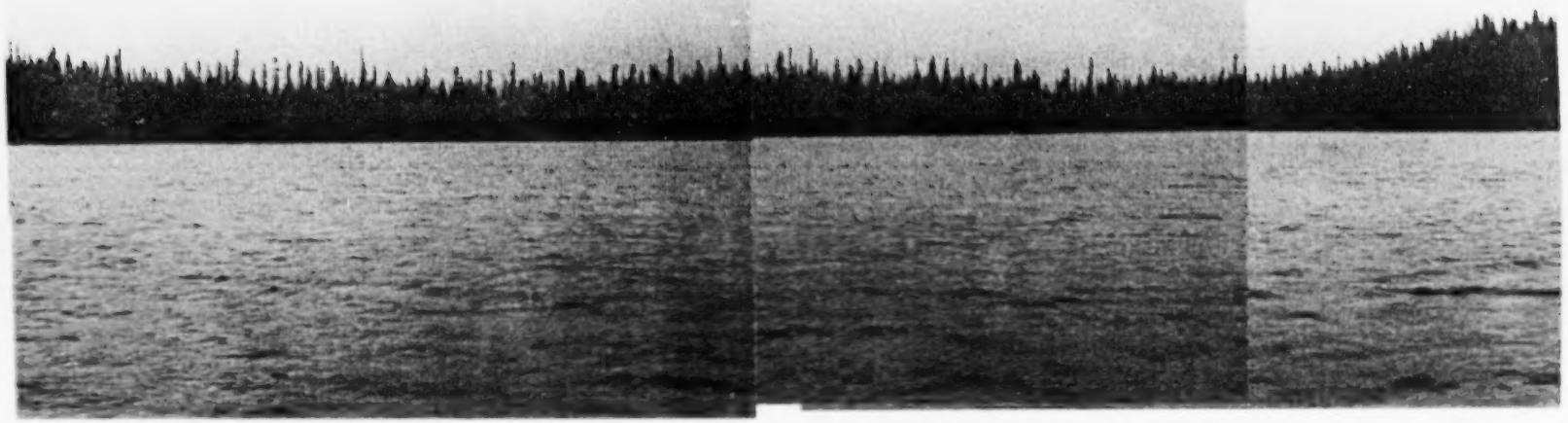


Plate # 3: Panoramic view of Unnamed Lake (Little MacDonald Lake) looking west from the center of the lake

Plate # 4: View of the benchmark located 2.0 m above present water level in a 42 cm diameter spruce tree that is 2.45 m from the present water's edge and located halfway along the south shore.

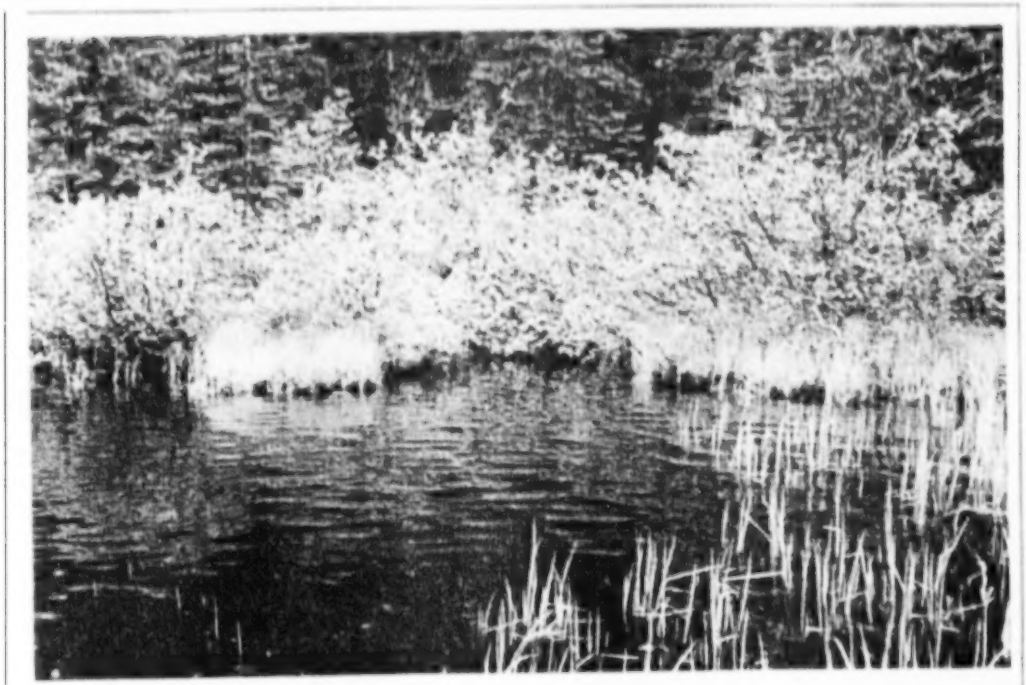


Plate # 5: View of the mouth of Inlet # 1 where it enters Unnamed Lake (Little MacDonald Lake) in the southeast corner of the lake.

Plate # 6: Upstream view of the main channel of Inlet # 1, taken approximately 25 m upstream of Unnamed Lake (Little MacDonald Lake).

Plate # 7: View of the mouth of Inlet # 2 where it enters Unnamed Lake (Little MacDonald Lake) in the northeast corner of the lake.

Plate # 8: Upstream view of the sample site on Inlet # 2, taken approximately 150 m upstream of Unnamed Lake (Little MacDonald Lake).

Plate # 9: Downstream view of the sample site on Inlet # 2, taken approximately 165 m upstream of Unnamed Lake (Little MacDonald Lake).

LAKE: Unnamed Lake (Little MacDonald Lake)

Plate # 10: View of the mouth of the outlet where it drains Unnamed Lake (Little MacDonald Lake) to the west from the north west corner of the lake.

Plate # 11: Downstream view of the debris jam on the outlet, located approximately 26 m downstream of Unnamed Lake (Little MacDonald Lake).

Plate # 12: Upstream view of the sample site on the outlet, taken approximately 40 m downstream of Unnamed Lake (Little MacDonald Lake).

Plate # 13: Downstream view of the sample site on the outlet, taken approximately 20 m downstream of Unnamed Lake (Little MacDonald Lake).

Appendix A

LABORATORY REPORT

Water Chemistry Analysis

RESULTS FOR UNNAMED LAKE #1 - 96/07/17 SAMPLES

Parameter Analyzed		Units	E223178 0.5M 963115-001	E223178 8.0M 963115-002
ALKALINITY		mg/l	110	110
CONDUCTIVITY		uS/cm	34	41
METALS/TOTAL (WATER-ICP)	AG	mg/l	<.01	-
	AL	mg/l	.24	-
	AS	mg/l	<.06	-
	B	mg/l	<.01	-
	BA	mg/l	.025	-
	BE	mg/l	<.001	-
	CA	mg/l	4	-
	CD	mg/l	<.006	-
	CO	mg/l	<.006	-
	CR	mg/l	.016	-
	CU	mg/l	<.006	-
	FE	mg/l	.11	-
	K	mg/l	.7	-
	MG	mg/l	1.2	-
	MN	mg/l	.005	-
	MO	mg/l	<.01	-
	NA	mg/l	.9	-
	NI	mg/l	<.02	-
	P	mg/l	<.1	-
	PB	mg/l	<.06	-
	SB	mg/l	<.06	-
	SE	mg/l	<.06	-
	SI	mg/l	1.94	-
	SN	mg/l	<.06	-
	SR	mg/l	.039	-
	TI	mg/l	<.002	-
	V	mg/l	<.01	-
	ZN	mg/l	.006	-
NITROGEN/AMMONIA		mg/l	.018	.014
/NITRITE+NITRATE		mg/l	.004	.005
/TOTAL		mg/l	.36	.4
PH		Rel.U.	7.08	6.37
PHOSPHORUS/O-PO4		mg/l	<.001	.001
/TOTAL		mg/l	.011	.021
/TOTAL DISSOLVED		mg/l	.005	.005
RESIDUE/FILTERABLE		mg/l	50	50
/NON-FILTERABLE		mg/l	<5	<5

Appendix B

Tributary Stream Data

D.F.O. / M.O.E. Stream Survey Form

DFO / MOE

STREAM SURVEY FORM

Stream Name: Unnamed Ck. Local: Inlet #2 to Unnamed Lk #1. Access: Method:

Watershed Code:

Location: ~50 m U/S of Unnamed Lk #1. Map #: 93-113. Peach: 1. Length (m): 20.

UTM: Pink: 1. Red: 1. Zone: 10.

Date Y M D: 06 07 17. Time: 1430. Agency: DFO. Crew: [illegible]. Photos: Air Photos:

C	PARAMETER	VALUE	METH	SPECIFIC DATA				OBSTRUCTIONS #			
								C	Type	Loc'n	
	Ave Chan. Width (m)	6.5	FT	5.8	7.0						
	Ave. Wet Width (m)	4.5	FT	5.4	4.0						
	Ave Max Riffle Depth (cm)	20	cm	20	23						
	Ave Max Pool Depth (cm)	45	cm	43	43						
	Gradient %	4.5	SE	C	BED MATERIAL	%	C	BANKS			
	Cas 0 Rif 0 Pool 5 Oth 0		SE		Clay (<0.06 mm)	0		Height / Undercut			
	Side Chan % 0 0-10 0 10-40 0 >40		SE		Silt (0.06-2 mm)	0	1	Texture F S L R			
	Alg Area % 0 0-5 0 5-10 0 >10 Density Trace		SE		Sand (2-6 mm)	0		Settlement EN CO FC OC (LC) N/A			
	Shade %	70	SE		Gravel (6-60 mm)	0		Value Change Ratio 0-2 2-5 5-10 (>10) N/A			
	COVER Total %	40	SE		Cobble (60-250 mm)	50		Flow Dry L M (H) Flood			
	Comp Sp Mix Log Boulder Veg Debris Totem 100% 15 10 30 0 0 45		IS		Boulder (>250 mm)	50		Flood Signs (m) B Stained N			
	Other Debris % 35 F Aspect				Bedrock	0		Bank % 5 Undercut			
					Particle Size Range	Compaction L M H		Max Depth (m) Top (m) Date (YMD)			

DISCHARGE

Parameter	Value	Meths	Spacing Data					
Wetted Width (m)	3.4	FT	3.0					
Mean Depth (m)	0.2	FM	0.3	0.25	0.3	0.2	0.1	
Mean Velocity (m/s)	2.2	FM	2.4	2.3	2.3	1.8	1.5	
Discharge (m³/s)	0.3	FM						

REACH SYMBOL

Run

Air Temp (°C) Water Temp (°C)

Sheet 1 of 2

Cl	Sp	Mix	No	Size Range (mm)	Axis 1	Axis 2	Use	Habitat
*1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

STREAM/VALLEY CROSS-SECTION (Looking Downstream) ☐

L R

PLANIMETRIC VIEW ☐

COMMENTS

Channel stability ☐ Debris ☐ Management Concerns ☐ Obstructions ☐ Riparian Zone ☐ Fish(es) (#s, Species) ☐ Etc

1 [illegible]

2 [illegible]

3 Compaction

Entered by

Date (YMD)

DFO / MOE
STREAM SURVEY FORM

Unnamed Ck to Outlet of Unnamed Lk #1

~40m DS of Unnamed Lk #1

93-N/13

96 0217 1340

C	PARAMETER	VALUE	METH.
		7.0	ST
		45	ST
	Ave Max Rffle Depth (cm)	25	Om
	Ave Max Pool Depth (cm)	45	Om
		DT	SC
		20 DC 10	GE
			GE
	Shade %	40	GE
	COVER Total %	60	GE
	Cover Type %	10 10 40 0 40 0	
	Cover Density %	25	

SPECIFIC DATA

C	Trap	Log n
	06	96

C	BANKS
	Height 0.3 Inundation 10
1	Texture (S) SL L A
	Cohesion BN CO FC OC (UC) N/A
	Valley Shape Type 0-2 2-5 5-10 (10+) N/A
	Flow (Dr) L M (H) Flood
	Flood Signs at m: 0.2 Brushes (Y) N
	Bank % 2 Undercut
	Water Temp °C 12.5 Conductivity (25°C)

	Substrate	%
	Organic Matter (<2mm)	20
	Small (2-16mm)	25
1	Large (16-64mm)	0
	Small Cobble (64-128mm)	0
	Large Cobble (128-256mm)	5
	Boulder (>256mm)	10

Dominant Substrate Type Composition Size (mm)

DISCHARGE

Parameter	Value	Units	Specific Data				
Wetted Width m	2.3	ST					
Mean Depth m	0.2	Om	0	0.2	0.30	0.33	0
Mean Velocity m/s	1.1	Fqm	5.5	4.3	4.1		
Discharge (m³/s)	0.41	Form					

REACH SYMBOL

C	Type	No.	Size Range mm	Use	Observations
S					
P					

STREAM/VALLEY CROSS-SECTION (Looking Downstream)

L R

PLANIMETRIC VIEW

COMMENTS

Channel Stability Debris Management Concerns Observations Riparian Zone Water Use Fisheries Etc.

Logs harvested along entire reach on both sides of creek

Appendix C

FISH SCALE ANALYSIS

Age Determination Completed By:

A.M.C. Technical Services Ltd.
Melinda M. Hirst
6809 Phillip Road.
Lantzville, B.C.
VOR 2H0

SEE ORIGINAL COPY

FOR SCALE SAMPLE READINGS

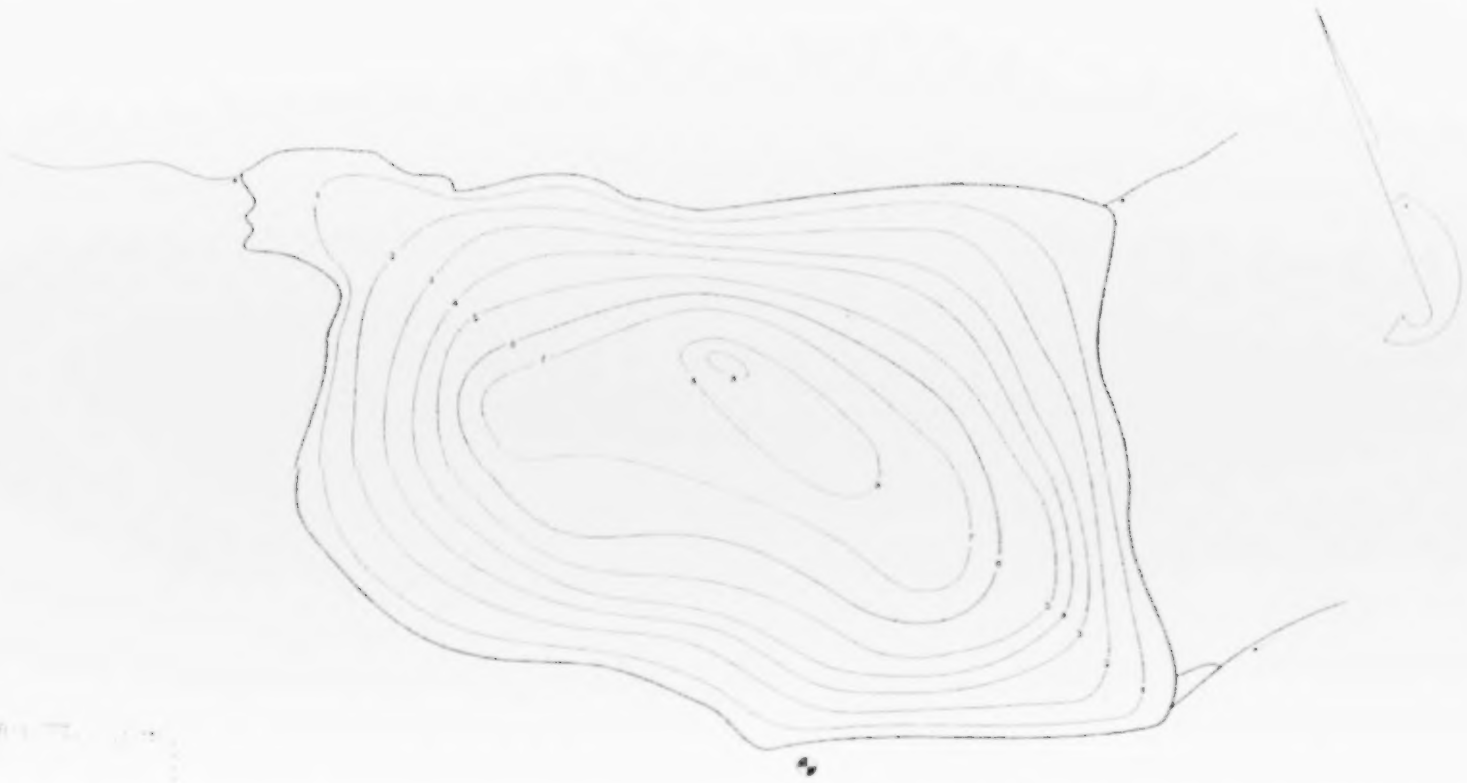
ORIGINAL COPY IS HELD BY

B. C. MINISTRY OF ENVIRONMENT, LANDS AND PARKS

PRINCE GEORGE, B. C.

Appendix D

BATHYMETRIC MAP



Reduced to
34%
of Original Size

STATISTICS AT TIME OF SURVEY

Unnamed Lake
(Little MacDonald Lake)